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ABSTRACT

Productivity in the private sector increased at a healthy rate in the United States from the time of the Depression until about 1966 and has remained uncertain throughout the 1970s. Educational productivity seems to show a similar pattern. Methods for measuring the value of educational outputs have changed since the cost-quality movement of the 1930s and 40s, when degrees of innovation served as the standard. In more recent years research has focused on students' test scores, which have been dropping since 1966. Although it is not clear that test scores are definitive measures of the value of education, the scores must be taken seriously. Solutions to the problem of lower educational productivity cannot readily be found by referring to practices in the private sector, due to the nonprofit nature of the educational enterprise. Instead, a solution may be found through careful handling of four ingredients: staff motivation, response to social change, curricular improvement, and increased commitment. (Author/PGD)

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Education and the National Productivity Problem: An Analysis

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Education and the National Productivity Problem:
An Analysis

American education and society are in the midst of a productivity crisis. The same nation which has wrought some of the greatest political and technological accomplishments in human history has suddenly begun to doubt its own productive capacity. The same schools, businesses, and units of government which helped cure numerous diseases and put man on the moon now question if they can educate their own children.Because productivity is crucial to the maintenance and development of a pluralistic, democratic system, current conditions require immediate attention.

Knowledge of the theoretical and historical framework of American productivity is essential to any consideration of this topic. At base, productivity may be defined as the relationship between cost and output. The most visible application of the concept is in economics, where tangible and intangible outputs are related to labor and material inputs. Discussion of productivity in such concerns is facilitated by the wealth of available data. The dollar value of finished products can readily be compared with the cost of these products. Yet productivity may also be applied to concerns not easily reducible to dollar amounts. Because of its organic approach to processes, it may be used to examine any activity where inputs and outputs exist.

The applicability of productive analysis to American education has been the object of widespread controversy. Many educators have argued that the benefits of schooling are not easily quantified. They note that the intangible nature of many educational concerns makes it impossible to reduce them to dollars and cents.[1]

There is a measure of truth in this line of reasoning. School activities do differ from those of business and industry. Education has never been required to produce quarterly profits or distribute annual dividends. At the same time, however, schools are as much related to the input-output formula as any other part of society. Professors and teachers must demonstrate, through teaching and research, that they justify the costs of salaries and promotions. The outcomes of educational institutions must satisfy voters and state legislatures before they obtain financial support. In the last analysis, the productivity of education is crucial. It will play a major role in determining the effectiveness of succeeding generations.

Inputs and Outputs in the Private Sector

Ample data exists concerning the history of American productivity in the private sector. In most of the period since 1920, input per man/hour has steadily increased. The most rapid advances took place in the years 1933-45 and 1947-65. In each of these periods, outputs per labor input increased by at least 70%.[2] The only interruptions of this movement have been the initial years of the Great Depression, the months immediately following the close of World War II, and the 1970's.[3]

Within the context of these historical developments, the present state of national productivity gives reason for concern. During the years 1947-66, annual productivity growth averaged 3.3%. Between 1966 and 1973, however, it slipped to 2.1%. Since 1973, no consistent upswing has developed. In 1974, private sector productivity actually declined 2.5%. It recovered the following years, rising by 1.3% in 1975 and 3.6% in 1976. Output per labor input rose by only 1.5%. In the first two quarters of 1978, productivity grew by more than 3%. These rises were

tempered, however, by smaller gains registered during the remaining months of the year.[4]

The intricacies of the development of productivity in the private sector are currently being debated by researchers. While discussion continues to focus on the meaning of differences between ratios obtained in various individual years, a few general conclusions seem in order. Unlike other decades of the last sixty years, which have been marked by substantial increases in output per labor hour, the 1970's have been characterized by comparatively small increases, and even declines, in these ratios. Despite the fact that productivity has not substantially decreased during this period, as it did during the Great Depression, a pattern of greatly diminished long term growth seems to have overtaken the private sector. There is no indication of a pendulum effect which will soon restore previous levels. Even optimistic predictions see output per labor input as growing by no more than 2.5% between 1973 and 1985. This figure is much closer to the 2.1% experienced between 1966 and 1973 than to the 3.3% which marked the 1947-66 period.[5]

The recent decline in the productive capacity of business itself gives substantial ground for concern about the future of the economy. Regrettably, numerical data for the public sector is not currently available. Because the outputs of education and government are not as subject to appraisal as are those of business, little effort has been made to compute output/input ratios for schools and public agencies. This situation is especially unfortunate. It results in an incomplete picture of the national productive capacity. It also leads to the assumption that the private sector is somehow responsible for the current pattern of diminishing returns on labor investments.[6]

A number of economists have attempted to delineate the nature of productivity in the public sector. By comparing the quality and character, as well as the quantity, of outputs and inputs, they have concluded that the crux of the production problem is in government, rather than business. They imply that the lack of fiscal constraints which exist in the public sector have encouraged waste and inefficiency.[7] Although not rooted on data as sophisticated as that which characterizes the private sector, opinions such as these bear examination. Thoughtful consideration of the relationship between inputs and outputs in education can lead to greater understanding of the role of schools in both the economy and general development of the nation.

Educational Inputs and Outputs

As has already been noted, the greatest hindrance to the analysis of productivity in education appears to be inaccessibility of data. Most of the need concerns outputs, rather than inputs.

One researcher has noted that it is a 'simple matter to speak of educational inputs'. Labor requirements can be defined in terms of salaries of faculty, librarians, clerical staff, custodians, nurses, dieticians, and administrators. Physical supplies and facilities, such as books, slides, audio equipment, athletic uniforms, and computer time are equally easy to identify and value.[8]

The real problem lies in definition and quantification of output. "How do you measure the output of a university? In terms of degrees granted or courses taught?", asks one researcher.[9] It should be readily apparent that neither of these statistics reveal much about the quality of teaching. Reliance on enrollments in courses will only produce larger classes as supposed indicators of faculty productivity. The problem of seeing graduates

as the finished products of the educational process also poses difficulties. Students are not inert components which simply roll off an assembly line. They are complex organisms whose ability or inability to perform is influenced by factors other than instruction. Another problem lies in the ambiguity of the difference between educational products and consumers. Are students themselves the results, or are they consumers of the results?[10]

A number of insights into the nature of the outputs and productivity in education can be gained from an examination of research already performed in this area. Opponents of applying productive analysis claim that little worthwhile data has been accumulated in this field. Attention to various types of information, however, reveals that the productivity picture is not nearly as cloudy as one might be led to believe.

During the first half of the twentieth century, it was widely believed that increases in educational expenditures produced increases in the quality of educational outputs. In the 1930's and 40's, the so-called cost-quality studies supported this pattern. The major tasks which faced school districts during these years: the provision of instructional days of adequate length, the development of libraries, and establishment of administrative functions, have since become prerequisites for programming in all areas. Research in that period focused on documentation of the relationship between the setup of these functions and the character of instruction.[12]

Cost-quality studies were pioneered largely through the efforts of Paul Mort and his colleagues at Teachers College, Columbia University. In attempting to define educational outputs, Mort evolved a number of rating systems. These scales, the researcher noted, provided "a basis for judgement of the relative degrees to which a given school approaches each objective within the range of the known invention or know-how".[13] As indicators of

educational output, these rating systems were instrumental in the development of early measures of productivity.

One of the earliest formulas for measuring the output of schools was Ferell's "Efficiency Index", an instrument first demonstrated in a 1936 examination of public education in Kentucky. The "Efficiency Index" included six measures of school strength: pupil-teacher ratio, length of instructional term, holding power, teacher training, and teacher experience. A more comprehensive rating tool, the "Guide for Self-Appraisal of School Systems", was developed by Paul Mort and Francis G. Cornell for implementation in Pennsylvania. This instrument contained 183 items. Many of these were highly subjective. The entire form was, according to its authors, useful for measuring the 'adaptability' of schools to new patterns and practices. A later evaluation form, "The Growing Edge", was assembled by Mort, William S. Vincent, and S.T. Newell. This scale was designed to correct various deficiencies attributed to the "Guide for Self-Appraisal of School Systems".[14]

A wide variety of data concerning educational outputs and school productivity emerged from the cost-quality movement. In their study of Pennsylvania trends, Mort and Cornell concluded that in 1935, the year of their population base, expenditures in Pennsylvania schools ranged from $25 to $100 per pupil. A correlation of 0.587 was found to exist between expenditures and the adoption of new practices.[15] In a 1948 study of Mississippi schools, William P. McClure sampled the relationship between 156 different educational components and expenditure levels. Of that total, 67 items showed a consistent positive relationship with expenditure levels. The findings indicated that increased support would be related only to certain aspects of school programming.[16] Another survey, performed by Lorne H. Woolatt in 1949

used the "Growing Edge" instrument to test the connection between inputs and outputs. The correlation between spending levels and composite scores gauged by the research was found to be 0.59. A 1955 replication revealed a correlation of 0.60.[17]

The cost-quality researchers of the 1930's and 40's performed the important groundwork of statistical research concerning educational productivity. Their assumptions were not those of modern practice. Certain innovations, now considered basic, were assumed to be related to quality education. Research concentrated on the extent to which expenditures produced the innovations. While the focus of the cost-quality movement was more narrow than the present perspective, however, its developments are applicable to contemporary concerns. By defining productivity in terms of specific innovations, it focused on a program-emphasis relevant to its historical context. By comparing expenditure levels with degrees of innovation, the movement suggested indices not unlike modern input-output ratios.

From the standpoint of the 1970's and 80's, the principal shortcoming of the work of Mort and its colleagues is the inapplicability of their definition of outputs. Their age was one where the need for innovation was universally accepted. The present period has seen both the advantages and the disadvantages of innovation, and demands a wider outlook.

Studies which have emerged since the cost-quality era have addressed the definition of outputs. In a massive effort at evaluation of the availability of educational opportunities for members of minority groups, conducted in 1964, James S. Coleman used school achievement as the measure of output. His research demonstrated that the quality of teachers, more than the availability of laboratory and other physical facilities, was the most significant influence on student achievement.[18] In an analysis of

productivity in Chicage and Atlanta schools, conducted early in the 1960's, Burkhead, Fox, and Holland defined output in terms of performance on Standardized I.Q. tests. The use of multiple regression analysis revealed a complex variety of relationships among inputs and outputs, with no single input variable adequately defining output.[19] Another important study, conducted by the Rand Corporation in 1969, examined input-output relationships in 97 New York State School Districts. Like the Coleman and Burkhead surveys, this treatment also used test scores as measures of school outputs. The effort revealed that expenditures on instructional supervision were positively related to pupil performance. In a classic inversion of the conclusions of the cost-quality studies, the Rand survey established a negative relationship between expenditures on books and supplies, and levels of performance.[20]

Interest in definition of input-output relationships in American schools greatly increased during the late 1960's and 1970's under the impetus of the National Educational Finance Project. In this survey, average SAT scores for ninth graders in school districts were used as measures of output. Differences in productivity among districts were best explained by proportions of students bound for post-secondary education and the experience levels of teachers.[21] A similar study, conducted in Kentucky by DeRuzzo in 1972, employed reading achievement scores to establish that expenses devoted to instructional purposes were the best predictors of productivity.[22]

Other research, sponsored by the National Education Research Finance project, has used similar approaches. In each case, achievement test score data has been used to measure output. Of a wide range of variables, instructional quality has been most often linked with high productivity.[23]

The most recent approaches to educational productivity have employed a variety of methodologies. Emphasis on test scores as indicators of output continue to be strong. At the same time, however, the entry of sociologists into education has brought increased attention to the role of career income as a measure of productivity.[24] The number of pupil/years required to graduate a particular class cohort has also been employed to define output.[25]

The efforts of statisticians, economists, and sociologists will doubtlessly continue to focus on the nature of educational outputs as they relate to productivity. From the foregoing history of research on the subject, a few conclusions seem to emerge. It is evident that level of innovation can no longer be employed to define desirable outputs. This criterion may have been sufficient for the first half of the twentieth century, when schools were sorely in need of such fundamental resources as libraries and administrative staffs. Yet, these conditions no longer prevail . Indeed, the definition of innovation in education in the schools has been altered to the point where Mort and his colleagues would probably no longer recognize it. The schools are now occupied by a host of concerns peripheral to their primary instructional mission.

While innovation has been discarded as a measure of output, it appears that achievement test scores have been adopted for this purpose. In study after study, scores on standardized or other tests have been used to measure the effect of various inputs on students. This should not, of itself, connote that test data is a perfect measure of the quality of the products of education. It should, however, demonstrate that these indices are valuable indicators of the progress of students and consequently, the productive capacity of American schools.

Critics will disagree with this. They will claim that examinations are excessively rigid; that they do little to gauge human creativity; and that they stimulate gearing of curriculum materials to test formats.

The merit in these points should not be dismissed. These same arguments, however, may be applied to any testing format. Standardized tests do cover every aspect of creativity. They are not evaluative panaceas. Yet, they do sample basic skills which are prerequisities for the development of creativity. Examinations may be rigid and stimulate the adaptation of curricula to their formats, but courses must be geared to some type of syllabi. If they are shaped to measure the basic skills and approaches treated by the standardized tests, so much the better!

The wider significance of the history of research efforts related to productivity should not be lost. It answers the oft-repeated comment that school productive capacity cannot be measured because school outputs cannot be quantified. Measures of educational output do exist. They have been validated ad infinitum. The only objections to their use arise when declining test scores suggest that the entire system might not be performing up to expectations. It is admitted that standardized tests do not measure the products of extracurricular activity and some of the creative aspects of basic learning. Unless measures of output begin with core skills and approaches, however, is there really any sense worrying about these concerns?

All of this should not imply that other indices of school productivity should be excluded. Indeed, performance indicators such as achievement in post-secondary education, career accomplishments, and income levels, as well as other factors, might be employed to gauge the character of the input-output relationship. In the use of these, as other measures, the

influence of intervening factors must be taken into account. While test scores measure a wide range of progress at the summation point of the school process, career and later-life indicators are skewed by a range of factors impacting the individual after the conclusion of formal schooling.

Applying Productivity to Contemporary Education

Once alternative indicators of educational output have been defined, they may be used with input data to compute productivity values. In this process, the comparatively rudimentary nature of methods for the determination of school productive capacities appear. Yet, with the realization that the ratios produced will not approach the precision of those computed for the private sector, a worthwhile effort to trace the outline of educational productivity may proceed.

The input side of the productivity ratio is perhaps the most readily determined.[26] A cursory examination of the value of educational expenditures reveals a general pattern of increase. With the exception of short periods in the depths of the Great Depression, and the months surrounding the close of World War II, sums devoted to American education have risen throughout the last fifty years. The significance of this trend may be somewhat limited by the influence of inflation. Examination of the percentage of the gross national product consumed by rising prices, however, reveals that this proportion, too has risen throughout the previous fifty years. Both higher and elementary-secondary education appear to have shared in this development. Although amounts of annual rises in expenditures have shown no particular pattern, an almost unbroken stream of increases has occurred.[27]

On the other side of the productivity ration, a variety of indicators delineate a somewhat different trend. On the Scholastic Aptitude Test (SAT) the traditional measure of verbal and quantitative ability, a period of general increases in scores culminating in the mid-1960's, has been followed by one of marked declines. Between the 1966-67 and 1974-75 administrations of the SAT, mean verbal scores dropped by 32 points, while quantitative scores have fallen 20 points. These declines constitute 5.3% and 3.3% of the total score ranges.[28] The pattern in SAT scores has been paralleled by statistics generated by the other major indicator of student ability, the American College Testing Program (ACT). Although the decline in ACT scores occurred later than the drop in SAT results, a significant drop in performance was recorded in the English, mathematics, and social studies components of the test.[29]

Other widely-used indices of student performance have also been on the decline. The National Assessment of Educational Progress (NAEP), the Comprehensive Tests of Basic Skills (CTBS), the Iowa Tests of Basic Skills (ITBS), and the Minnesota Scholastic Aptitude Test (MSAT) all have recorded decreases in student achievement.[30]

Beyond standardized test scores, other indicators help delineate nature of educational outputs. A test administered to nearly 43,000 freshmen at New Jersey colleges revealed that substantial proportions of the participants were "not adequately prepared in the basic skills of reading, writing, and mathematics"...and were" thereby hindered from doing college level work in a broad variety of disciplines."[31] The admissions office at Stanford University recently painted a similar picture. Director of Admissions Fred Hargadon, concluded that "...even the best among our high school graduates appear to be disappointingly weak in terms of basic

skills of reading and writing, skills upon which the development of critical thinking in all fields of human knowledge is dependent".[32]

Other indices of educational output may be examined. It might be noted that the 1970's have seen an increase in the grades achieved by students on local examinations. The obvious existence of a so-called grade inflation, however, should preclude the need for extended discussion of the relationship between locally computed grades and the quality of education.[33]

The comparison of input and output indicators entailed in the computation of productivity is a relatively simple matter. Consideration of the trends exhibited by dollars placed in the school process and results gained from it quickly produces the conclusion that the productivity capacity of American education is declining. In a period when the proportion of the gross national product devoted to schools rose from 3.1 to 8.0%;the performance of education first increased, then declined. Against the background of rising inputs, the drop in quality of outputs is especially significant. By comparison, it appears far more serious than the productivity difficulties in the private sector. Business has been plagued with decreasing gains in productive capacity . Yet annual increases, however small, are still the rule. Education seems to have encountered actual decreases in productivity. The pattern of repeated annual declines in standardized test means demonstrates that this trend is not temporary or random in nature.

Investigating and Coping with Lower Productivity

The drop in productive capacity is serious. Economists have called it the 'weak link' in the entire American economy. Gordon Bloom points out that the decline in productivity is far more dangerous than inflation. He notes that, because the trend indicates that the cost of inputs is rising

faster than the value of outputs, prices are struggling to keep up with wages. By triggering the price spiral, lower productive capacity thus becomes the basic cause of inflation.[34]

The implications of this development are profound. A continuation of reduced productivity will, according to Bloom,

> "(stimulate) a rise in prices (which) would aggravate the purchasing problems of the poor, accentuate the resentments of the middle class, and magnify the cost of attacking all the problems which need to be solved to improve the quality of life in this nation--racial discrimination, balance of trade, urban redevelopment, to mention only a few."[35]

Bloom adds that each day this pattern continues makes long term solutions even more difficult to implement.[36]

The foregoing statistics and projections should satisfy even the skeptic that extended lower productivity is both real and serious. Once the impact of the trend sinks in, two questions emerge: what are the reasons for the decline, and what can be done about it?

The private sector, which has preceded education and government in its awareness of the nature of productivity, offers some clues. Investigation of the reasons behind the proportionate drop of business outputs focuses on the unprecedented increases in employee compensation which have occurred during recent years, and the failure of these rising wages to provoke higher production. Psychological studies have demonstrated a lack of worker commitment to production processes. Gordon Bloom drew attention to a general attitudinal malaise. He has asserted that progress is becoming anathema and that caution and reluctance have become the bywords.[37]

Approaches to the business productivity vary in content. One technique that will probably fail, many economists conclude, is inaction. The problem will not cure itself. Here the private sector has apparently lost a measure

of its trust in the schools. "We cannot," Bloom asserts, "rely on the increasingly high level of educational attainment of our work force to create sufficient additional annual productivity".[38] Business has also apparently lost hope of help from government. If government is, indeed, the real locus of the productivity crisis, it seems unreasonable to expect a solution from this source.[39]

Without substantial aid from non-private sources, American business has turned to labor in hopes of constructing a cooperative approach to lower productivity. Adapting techniques used in Britain, the Pacific Maritime Association and the International Longshoremen's and Warehousemen's Union negotiated the so-called "Modernization and Mechanization" contract in 1960. Under this document, and its subsequent renewals, the union agreed to abandon most of its restrictive work practices along with its opposition to mechanization, in return for an industry commitment to pay $5,000,000 into a jointly managed fund for guaranteed wages and pension benefits. The so-called Scanlon Plan, which offers employees participation in cost savings, in return for greater productivity, has also been applied in various companies.[40]

Productivity bargaining shows considerable promise in the private sector of the economy. In approaching worker attitudes, it deals with the basic factors which lead to greater output.

To some extent, the issues with influence productivity in education and government are the same ones which touch business. In both areas, there is a need for better results. In each field, professional performance seems to be a major root of the problem. Yet, important differences exist between the public and private sectors. Incentives beyond monetary rewards are necessary to encourage excellence in the education of children. Profit-sharing can hardly be an option in not-for-profit organizations.

In education, as in business, the roots of the problem lie in the familiar input-output formula. From an historical standpoint, we may have reached the limits of the pattern of growth identified by the cost-quality researchers of the first half of the century. Those individuals argued that rises in expenditures produced greater innovation and increases in the quality of outputs. The 1960's and 70's have very nicely demonstrated that, beyond a certain point, more money can actually be accompanied by declines in the value of outputs.

If expenditures on education are not an important cause of the productivity decline, other candidates readily come to mind. The experience of the private sector suggests that professional attitudes may be an important contributor. Like maritime workers and truck drivers, teachers have formed collective bargaining units. The definition of security and rewards according to seniority entailed by unionization tends to restrict teacher productivity. The rigid definition of the school day and year encouraged by collective bargaining have helped reduce teaching to a clock-punching activity. Recent years have seen a reduction of teacher-student contact hours. The extension of unionization to university faculties has produced similar constraints in academia.

Societal patterns have also influenced educational productivity. Increasing numbers of students from low socio-economic and minority groups are entering and remaining in schools and colleges.[41] Changing moves have altered the shape of the American family. The influence of television, it has been noted, stimulates the development of passive attitudes and promotes expectation for 'spoon-fed' learning rather than desires for active investigation.[42]

Beyond personnel and social patterns lies the impact of changing curricula on student development. The same years which witnessed declines in standardized test scores and the abilities of college freshmen also saw a dilution of public school, and in many cases, college courses of study. The 'everything is beautiful, in its own way' mentality of the 1960's has unfortunately promoted the evolution of programs without standards. Statistics delineate the development of this trend in the public schools. National Center for Education Data report that enrollment in basic English courses fell between 15 and 20% during the early 1970's. In California, enrollment in English composition dropped 77%.[43] Fundamental offerings in algebra, foreign languages, and the physical sciences have suffered a similar fate.[44] Accompanying this trend has been the development of greater offerings in non-traditional areas. These fields include college level history and calculus; social sciences such as psychology and political science; arts and crafts; and material with direct vocational applications.[45]

The problem of lower educational productivity appears to have roots in a number of areas. Some, such as those relating to curriculum and teaching, lend themselves to treatment within the schools. Others, including the influence of television and changing mores, require a commitment of learning which transcends environmental influences.

Above all, approaches to the productivity situation should be accompanied by a belief that the task can, indeed, be accomplished. Some authorities suggest otherwise. Historian Henry Stelle Commager observes that,

> "...we have asked (our educational system)to perform a miracle--to teach all subjects necessary to enable the young to understand the world they are in and the one they shall live in in the future; to train them for all the skills required to run an immensely complicated economy and society; to all the ideas and values we ourselves do not observe."[46]

If this is true, might it be more profitable to give up now and avoid wasting effort?, of course not! Hesitation and reluctance helped develop this problem in the first place. More of the same will only make the situation more serious. The most vital resources, those of ingenuity and insight, exist now as much as they ever did. What is required is a general mobilization of these resources against the various aspects of the productivity problem.

The offensive must proceed along a number of fronts. At the professional level, teachers must be encouraged to place greater emphasis on the development of basic capacities of students. A wealth of professional talent exists among the public school faculties of this nation, yet many practices seem to limit the application of this talent. Some of these constraints arise from traditions such as tenure, while others have emerged out of the collective bargaining process. It is conceded that these safeguards have their merits. From one perspective, they help protect academic freedom and employee security. At the same time, however, these so-called protections seem to preserve educational mediocrity rather than stimulate instructional excellence. In so doing, they effectively stifle the academic freedom and potential of the entire national community.[47]

Attention has also been devoted to the possibility of increasing the salaries of educational professionals. Apparently, pay raises in the private sector, when tied to productivity agreements,have produced higher outputs. The possible beneficial influence of higher salaries should not be underestimated. At the same time, other, compensation-related issues should also be taken into account. One important factor is the amount of money available for such expenses. It should be remembered that in most states, school enrollments are on the decline, and efforts have focused on simply maintaining

revenues at existing levels. The rise of the so-called anti-tax movement has further constrained school monies.[48]

If, through reorganization or other measures, financial incentives can be produced, there is no reason to believe that merely adding them to the current system will solve anything. Amid the current morass of school labor regulations, productivity incentives simply won't have a chance. Meaningful efforts at change must focus on modifying impediments to instructional improvement, as well as on dangling rewards.

Consideration of the possibility of teacher incentives would not be complete if the effectiveness of financial rewards were not called to question. Production workers may be largely motivated by monetary compensation, yet teachers and administrators are supposedly moved by the intellectual and conceptual patterns. This fact can be a mixed blessing. It can save excessive expenditure on unproductive salary increases, but it carries with it the necessity for vigorous educational leadership.

While approaches to stimulating educator output may proceed within districts and universities those dealing with such factors as the role of minority populations, changing values, and television must be met in the general society. In their totality, these issues seem to pose a considerable challenge. It should be remembered, however, that each of them is a human creation and that each, in one form or another, has been dealt with before. American education has worked with minority populations of proportions far larger than the ones now in schools and colleges. Neither should we be so arrogant as to assume that ours is the only period which has dealt with changing values. It should be recalled that American education met and coped with massive alterations in mores during the 1920's. The influence of television may also seem formidable. Yet this nation, of all

others, seems able to use technology to its advantage. If American survived radio and the movies, she should be able to live with television.

At base, the need for educational responses to such developments as changing values and technological innovation suggests the necessity for more emphasis on the construction of viable curricula within the schools. A strong and vigorous curriculum will inspire students to concentrate on the core of their education and see their world in the context of learning rather than as an escape from it. Curriculum may be an important locus of the productivity decline. It may be one area in which we already have the answers.

During recent years, an impressive amount of research has demonstrated the existence of positive relationships between the extend to which schools emphasize basic, traditional subjects and the performances of the students which emerge. Districts which have attained the highest levels of productivity have been those which have concentrated on core subjects such as English, mathematics, foreign languages, and physical sciences, and stayed away from many of the 'fads' of contemporary education. Administrators at these institutions have noted that writing, spelling, grammar, and vocabulary, as well as basic computational skills, have remained the foci of their problems.[49]

These facts should hardly prove surprising. Without basic verbal and quantitative skills, students are unable to progress into advanced subject areas. All of the enrichment programming in the world will have little effect unless students can understand and work with the subject material. In the curriculum area, at least, the situation seems ironic. As popular lyric goes, "this time we had the answer right there in our hands". The only real need is to implement the approach.

Beyond staffing, coping with society, and curriculum, the final ingredient for the improvement of productivity becomes commitment. This is not a subject to be passed over lightly. A firm resolve to emphasize and develop outputs is necessary for the improvement of educational productivity. The temptations to do otherwise are many. Students clamor for more classroom games and slide presentations. Parents are more approving if the grades are good. Yet, American schools have already been down this road. Everyone should know where it leads.

The resources for the improvement of school productivity are at hand. The past is full of data on the viability of various methods. Businesses, and colleges are pleading for better graduates. Communities are demanding that educators be accountable for the use of tax dollars. Technology of varying degrees is now available.

The productivity challenge must be answered. There are no real options available. To ignore the problem is to invite disaster. Because schools and colleges shape the future of the civilization, their productive capacity will determine that of the larger society. Either the efforts of citizens and educators must be mobilized soon, or the problem will become so entrenched it will be impossible to dislodge.

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